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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,473	12/27/2001	Sunghoe Yoon	8733.573.00	7768
30827	7590	08/23/2005	EXAMINER	
MCKENNA LONG & ALDRIDGE LLP 1900 K STREET, NW WASHINGTON, DC 20006			DI GRAZIO, JEANNE A	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/026,473

Applicant(s)

YOON, SUNGHOE

Examiner

Jeanne A. Di Grazio

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-8 and 10-14 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1,3-8 and 10-14 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 27 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims

Claims 1, 3-8 and 10-14 are pending. No claims have been amended per Amendment of June 9, 2005.

Priority

Priority to Korean Patent Application No. 2001-25693 (May 11, 2001) is claimed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-8 and 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (APA)(Figures 1 and 2, conventional liquid crystal display devices) in view of United States Patent 5,682,212 (to Maurer et al.).

As to claim 1, Applicant's Admitted Prior Art (APA), Figure 1, teaches and discloses the following conventional elements of a reflective liquid crystal display. Specifically, APA has a first substrate (1) having a plurality of switching elements, a first electrode (3, plurality of reflective electrodes), a second substrate (2), a second electrode (5) beneath the second substrate

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(2) (common electrode, 5), a retardation layer (7) on the second substrate (2), and a polarizer (8) on the retardation layer (7), and a liquid crystal layer (6) between the first electrode (3) and the second electrode (5). A color filter (4) is furthermore formed beneath a second substrate (2).

APA Figure 2 furthermore shows that the color filter (14) is a cholesteric color filter and there is an absorption layer (12) on the lower substrate (11). The cholesteric color filter (14) is located on the absorption layer (12).

APA does not appear to explicitly specify a cholesteric liquid crystal color filter having a plurality of protrusions, a shape, a size and a distribution of the protrusions being controlled to make a distribution of reflected light be uniform within a viewing angle range of about 30 degrees upward and downward from a front direction.

Please note that Applicant's Specification equates the above limitation to – uniform luminance regardless of the viewing angle – (Specification at page 14 [0031]).

Maurer teaches and discloses optical elements having image-forming and polarization-selective reflection and that contain cholesteric liquid crystals and the preparation for said elements (Title, entire patent).

Figure 2b of Maurer illustrates a cross section through a plan view of a cholesteric layer (3) that has a plurality of protrusions. The layer is uneven, undulating, and the protrusions may be seen as the crests adjacent a series of concavities (17 and 18).

The reflector as shown in Figure 2b forms an image without affecting transmitted light and functions as a combination color filter, polarizer and lens (Column 2, Lines 30-40).

Furthermore, because the structure as taught and disclosed by Maurer is the same as that claimed by Applicant and Applicant equates a 'cholesteric liquid crystal color filter having a

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plurality of protrusions, a shape, a size and a distribution of the protrusions being controlled to make a distribution of reflected light be uniform within a viewing angle range of about 30 degrees upward and downward from a front direction' to have uniform luminance regardless of viewing angle, then, the structure contributes to uniform luminance.

Maurer is evidence that ordinary workers in the field of liquid crystals would have found the reason, suggestion and motivation to include a cholesteric color filter of plural protrusions to form an image without affecting transmitted light and to function as a combination color filter, polarizer and lens (Column 2, Lines 30-40) and for uniform luminance.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify APA in view of Maurer for forming an image without affecting transmitted light and to function as a combination color filter, polarizer and lens (Column 2, Lines 30-40) and for uniform luminance.

As to claim 3, said limitation "a shape, a size and a distribution of the protrusions being controlled to make a distribution of reflected light be decreased gradually within about 20% of the luminance of a front direction" means – uniform luminance – according to Applicant's Specification. As such, the configuration of Maurer is presumed to meet said limitation for the above noted reasons.

As to claims 4 and 5, APA discloses switching elements as noted.

As to claims 6-8 and 10-14: Applicant's recited method steps would have been rendered obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made in view of the device as taught and disclosed by the above cited prior art and as previously applied to the device claims.

Please further note that the protrusions of Maurer are rounded (Applicant's claim 8).

Response to Arguments

Applicant's arguments filed June 9, 2005 have been fully considered but they are not persuasive.

The Examiner appreciates Applicant's arguments and the points raised therein. However, the Examiner respectfully disagrees.

Applicant argues that (1) "[n]owhere in Maurer is there any discussion of the desirability of using the optical element in an LCD device as suggested by the Examiner" and (2) "Maurer discloses that the cholesteric layer has a uniform thickness while the transparent substrates have a curved surface based on the desired focal length of the optical element." (Remarks of June 9, 2005 at pages 3 and 4 respectively).

Applicant also requests that "the Examiner more clearly point out how the structure of the optical element of Maurer contributes to uniform luminance." (Remarks at page 4).

Maurer contributes to uniform luminance for at least the following reasons.

Please note, first, that Applicant does not claim that the cholesteric layer has a variable thickness. It is quite possible and reasonable for a curved/ rippled surface to in fact have a uniform thickness. Protrusions may be of a shape, size and distribution such that they are uniform and hence the thickness is constant.

The structure as shown in Maurer (Figure 2b) features such a surface.

Because the structure as taught and disclosed by Maurer is the same as that claimed by Applicant and Applicant equates a 'cholesteric liquid crystal color filter having a plurality of

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protrusions, a shape, a size and a distribution of the protrusions being controlled to make a distribution of reflected light be uniform within a viewing angle range of about 30 degrees upward and downward from a front direction' to have uniform luminance regardless of viewing angle, then, the Maurer structure contributes to uniform luminance.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (571)272-2289.

The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeanne Andrea Di Grazio
Patent Examiner
Art Unit 2871

JDG


ROBERT KIM
SUPERVISORY PATENT EXAMINER